

SECTION 1

Analog Meters

(Switchboard Instruments, Panel Meters)

- Simpson
- Yokogawa (YCA)

Analog meters from the following manufacturers are also available but not shown in catalog:

- Beede
- Crompton
- Modutec
- Texmate
- Triplett (LFE)

ANALOG METERS

Switchboard Instruments

1



Key to AB/DB Switchboard Numbering System (See Notes)

103	01	1	XX	XX	7	XXX
Digits 1, 2, & 3 Type 101-TB-AB/DB14 102-P&J AB/DB17 103-TB-AB/DB40 106-P&J-AB40 Synch. 120-P&J-AB16 Synch. 121-TB-AB/DB16	Digits 4 & 5 Measured Qty. 01-DC Volts 02-AC Volts 07 Voltmeter (expanded scale) 11-DC Amps 12-DC Millivolts 13-AC Amps 19-Supp. Zero 21-2W1P Watts 1 EL 22-3W3P Watts 2 EL 25-4W3P Watts 2½ EL 28-3W3P Vars (cross phase) 2 EL 29-4W3P Vars (cross phase) 2½ EL 31-2W1P Vars 1 EL 32-3W3P Vars (external phase shifter) 2 EL 34-4W3P Vars (external phase shifter) 2½ EL 37-Freq. Meter 40-Power Factor 3W3P & 4W3P (balanced) 41-Power Factor 2W1P 45-Synchroscope 46-Power Factor-3W3P (unbalanced) 47-Power Factor-4W3P (unbalanced) 50-Temp. Ind. 62-DC Tach. Ind. 63-AC Tach. Ind. 70-2W1P Watts • 1 EL 71-3W3P Watts • 2 EL 73-4W3P Watts • 2½ EL 74-4W3P Vars • (cross phase) 2½ EL 76-2W1P Vars • 1 EL 77-3W3P Vars • (for use w/external phase shifter) 2 EL 79-4W3P Vars • (for use w/external phase shifter) 2½ EL 81-3W3P Vars • 2 EL (cross PH)	Digit 6 Mechanical Features 1-Zero left, black cover 2-Zero center, black cover 3-Zero left, gray cover 4-Zero center, gray cover 5-Zero left, antiglare, black cover 6-Zero center, antiglare, black cover	Digits 7 & 8 - Elec. Rtg. Ex: LA = 1A LE = 2A LS = 5A (see note 2)	Digits 9 & 10 - Scale Ex: FA = 0-1mA FX = 0-5mA (see note 2)	Digit 11 - Factory Style No. For factory use.	Digits 12, 13 & 14-Spcl Units When used, these denote unique models. Refer to factory for details. For Wattmeters & Varmeters.

NOTES:

1. This tabulation is not all inclusive, to be used for defining cat. nos. only
2. For watt & var cat. nos. digits 7-10 & 12-14 designate rating-cal watts-scale & legend information

3. TB = taut band movement
4. P&J = pivot & jewel movement
5. "P" suffix denotes plastic case
- Low Cal Watts, Zero Center

Switchboard Instruments



Power Factor Scale
for Balance System

Power-Factor Meters

Rating (Amperes)	Rating (L-L Volts)	Scale	AB-40 Cat. No.	AB-16 Cat. No.
Single-Phase/2-Wire, 60Hz				
5	120	.5-1-.5	103 412 FCAD	121 412 FCAD
3-Phase 3- & 4-Wire, 50/60Hz Balanced System Only				
5	120	.5-1-.5	103 402 FCAD	121 402 FCAD
5	208	.5-1-.5	103 402 FDAD	—
5	240	.5-1-.5	103 402 FEAD	121 402 FEAD
5	480	.5-1-.5	103 402 FFAD	—
5	600	.5-1-.5	103 402 FGAD	—
3-Phase 3-Wire, 60Hz Unbalanced Systems				
5	120	.5-1-.5	103 462 FCAD	—
5	240	.5-1-.5	103 462 FEAD	—
3-Phase 4-Wire, 60Hz Unbalanced Systems				
5	120	.5-1-.5	103 472 FCAD	—
5	208	.5-1-.5	103 472 FDAD	—
5	416*	.5-1-.5	103 472 FEAD	—
Instruction Book: 4555K35P0701 (For Unbalanced), Outline Dimensions: See page 9				
Instruction Book: 4555K25P0001 (For Balanced), Outline Dimensions: See page 9				

*240 V L-N



Frequency Meters, 120V

Scale (Hz)	Center Frequency (Hz)	Accuracy (Hz)	AB-40 Cat. No.	AB-16 Cat. No.
45-55	50	±0.15	103 372 AGAG	121 372 AGAG
45-65	55	±0.25	103 372 AJAJ	121 372 AJAJ
48-52	50	±0.093	103 372 AKAK	121 372 AKAK
50-70	60	±0.25	103 372 ALAL	121 372 ALAL
55-65	60	±0.15	103 372 ANAN	121 372 ANAN
58-62	60	±0.093	103 372 ATAT	121 372 ATAT
59-61	60	±0.047	103 372 ASAS	121 372 ASAS
350-450	400	±1.3	103 372 BHBH	121 372 BHBH
390-410	400	±0.492	103 372 BLBL	121 372 BLBL
Instruction Book: 4555K24P0001, Outline Dimensions: See page 9				



Synchrosopes — Pivot & Jewel, 120 Volt

Scale	Normal Frequency	AB-40 Cat. No.	AB-16 Cat. No.
"Slow-Fast"	50	106 452 ABAA	120 452 ABAA
"Slow-Fast"	60	106 452 AAAA	120 452 AAAA
"Slow-Fast"	400	106 452 ACAA	120 452 ACAA
Instruction Book: 4555K20P0701, Outline Dimensions: See page 9			



Temperature Indicators (Lead Resistance = 0.3 ohms)

Rating (Volts)	Scale	DB-40 Cat. No.	DB-16 Cat. No.
1-Percent of Span for 10-ohm copper RTDs (Resistance Temperature Detectors) 50-600 Hz			
120	20 -140°C	103 502 CAAB†	121 502 CAAB†
120	0-180°F	103 502 CDAD†	121 502 CDAD†
Instruction Book: 4555K12P0001, Outline Dimensions: See page 9			

† Catalog number includes calibrated test resistor

Switchboard Instruments

AC Wattmeters Non-Isolated (cannot be used with external Phase Shifter for Vars)

Rating (Amperes)	Rating (Volts)	Scale	AB-40 Cat. No.	AB-16 Cat. No.
Single-Phase/2-Wire, 1-Element, Transformer-Rated, 50/60 Hz				
5	120	†	103 21 □ A	121 21 □ A
3-Phase/3-Wire, 2-Element, Transformer-Rated, 50/60Hz ■				
5	120	†	103 22 □ A	121 22 □ A
5	240	†	103 22 □ C	121 22 □ C
5	480*	†	103 22 □ D	—
5	600*	†	103 22 □ E	—
3-Phase/4-Wire, 2½-Element, Transformer-Rated, 50/60Hz, (Voltage balanced) ■				
5	69	†	103 25 □ F	121 25 □ F
5	120	†	103 25 □ A	121 25 □ A
5	240	†	103 25 □ C	121 25 □ C
Instruction Book: 4555K26P0701, Outline Dimensions: See page 9				

† Order by description. Specify CT (Current Transformer) and/or PT (Potential Transformer) ratios if used and scale desired.

* UL version in short case, non-UL version in long case.

□ Sixth digit signifies pointer deflection (1-zero-left, 2-zero-center).



NOTE:

See Application Guide and Tables on the following six pages for selection of commonly used Watt and Var Meters.

Varmeters are usually zero-center and scaled for half the scale values of the accompanying wattmeters.

Example: If the Wattmeter is scaled 0-100 Kilowatts, the Varmeter is scaled 50-0-50 Kilovars.

Varmeters (Voltages must be balanced for all polyphase Varmeters)

Rating (Amperes)	Rating (Volts)	Scale	AB-40 Cat. No.	AB-16 Cat. No.
Single-Phase/2-Wire, 1-Element, Transformer Rated, 60Hz				
5	120	†	103 31 □ A	121 31 □ A
5	120	†	103 762 A*	121 762 A.....*
3-Phase/3-Wire, 2-Element, Transformer-Rated, 50/60Hz (Cannot be used with External Phase Shifter) ■				
5	120	†	103 28 □ A	121 28 □ A...
5	120	†	103 812 A•	121 812 A....•
3-Phase/3-Wire, 2-Element, Transformer-Rated, 60Hz For Use With External Phase Shifters				
5	120	†	103 32 □ A	121 32 □ A
5	120	†	103 772 A*	121 77 2 A*
3-Phase/4-Wire, 2½-Element, Transformer-Rated, 50/60Hz (Cannot be used with External Phase Shifter) ■				
5	208 ★	†	103 29 □ B....	121 29 □ B....
5	208 ★	†	103 742 B.... s	121 742 B.... s
3-Phase/4-Wire, 2½-Element, Transformer-Rated, 60Hz For Use with External Phase Shifters				
5	120	†	103 34 □ A	121 34 □ A
5	120	†	103 792 A*	121 792 A*
Instruction Book: 4555K27P0701, Outline Dimensions: See page 9				

† Order by description. Specify CT (Current Transformer) and/or PT (Potential Transformer) ratios if used and scale desired.

* Used for 0-Center when calibrating watts are less than ±380.

• Used for 0-Center when calibrating watts are less than ±658.

▲ Used for 0-Center when calibrating watts are less than ±760.

★ The 21/2-element varmeters used on 4-wire 3-phase 120V L-N systems are rated 208V because they are connected line-to-line.

□ Sixth digit signifies pointer deflection (1-zero left, 2-zero center).



YOKOGAWA ◆

Switchboard Instruments



AB-40
Metal Case



AB-40
Plastic Case

AC Ammeters

Rating (Amperes)	Scale (Amperes)	AB-14 Cat. No.	AB-40 Metal Case	AB-40 Plastic Case	AB-16 Cat. No.
Self-Contained, 40/70 Hz					
1	0-1	101 133 LALA	103 131 LALA	103 131 LALA7/P	121 131 LALA
1.5	0-1.5	101 133 LCLC	103 131 LCLC	103 131 LCLC7/P	121 131 LCLC
2	0-2	101 133 LELE	103 131 LELE	103 131 LELE7/P	121 131 LELE
3	0-3	101 133 LJLJ	103 131 LJLJ	103 131 LJLJ7/P	121 131 LJLJ
5	0-5	101 133 LSLS	103 131 LSLS	103 131 LSLS7/P	121 131 LSLS
7.5	0-7.5	101 133 MFMF	103 131 MFMF	103 131 MFMF7/P	121 131 MFMF
10	0-10	101 133 MTMT	103 131 MTMT	103 131 MTMT7/P	121 131 MTMT
15	0-15	101 133 NDND	103 131 NDND	103 131 NDND7/P	121 131 NDND
20	0-20	101 133 NGNG	103 131 NGNG	103 131 NGNG7/P	121 131 NGNG
30	0-30	101 133 NLNL	103 131 NLNL	103 131 NLNL7/P	—
Transformer-Rated, 40/70Hz					
5	0-10	101 133 LSMT	103 131 LSMT	103 131 LSMT7/P	121 131 LSMT
5	0-15	101 133 LSND	103 131 LSND	103 131 LSND7/P	121 131 LSND
5	0-20	101 133 LSNG	103 131 LSNG	103 131 LSNG7/P	121 131 LSNG
5	0-25	101 133 LSNJ	103 131 LSNJ	103 131 LSNJ7/P	121 131 LSNJ
5	0-30	101 133 LSNL	103 131 LSNL	103 131 LSNL7/P	121 131 LSNL
5	0-40	101 133 LSNP	103 131 LSNP	103 131 LSNP7/P	121 131 LSNP
5	0-50	101 133 LSNT	103 131 LSNT	103 131 LSNT7/P	121 131 LSNT
5	0-75	101 133 LSPB	103 131 LSPB	103 131 LSPB7/P	121 131 LSPB
5	0-100	101 133 LSPK	103 131 LSPK	103 131 LSPK7/P	121 131 LSPK
5	0-150	101 133 LSPZ	103 131 LSPZ	103 131 LSPZ7/P	121 131 LSPZ
5	0-200	101 133 LSRL	103 131 LSRL	103 131 LSRL7/P	121 131 LSRL
5	0-250	101 133 LSRS	103 131 LSRS	103 131 LSRS7/P	121 131 LSRS
5	0-300	101 133 LSRX	103 131 LSRX	103 131 LSRX7/P	121 131 LSRX
5	0-400	101 133 LSSC	103 131 LSSC	103 131 LSSC7/P	121 131 LSSC
5	0-500	101 133 LSSF	103 131 LSSF	103 131 LSSF7/P	121 131 LSSF
5	0-600	101 133 LSSJ	103 131 LSSJ	103 131 LSSJ7/P	121 131 LSSJ
5	0-800	101 133 LSSN	103 131 LSSN	103 131 LSSN7/P	121 131 LSSN
5	0-1000	101 133 LSSS	103 131 LSSS	103 131 LSSS7/P	121 131 LSSS
5	0-1200	101 133 LSSV	103 131 LSSV	103 131 LSSV7/P	121 131 LSSV
5	0-1500	101 133 LSTC	103 131 LSTC	103 131 LSTC7/P	121 131 LSTC
5	0-2000	101 133 LSTM	103 131 LSTM	103 131 LSTM7/P	121 131 LSTM
5	0-2500	101 133 LSTV	103 131 LSTV	103 131 LSTV7/P	121 131 LSTV
5	0-3000	101 133 LSUA	103 131 LSUA	103 131 LSUA7/P	121 131 LSUA
5	0-4000	101 133 LSUE	103 131 LSUE	103 131 LSUE7/P	121 131 LSUE
5	0-5000	101 133 LSUJ	103 131 LSUJ	103 131 LSUJ7/P	121 131 LSUJ
5	0-6000	101 133 LSUP	103 131 LSUP	103 131 LSUP7/P	121 131 LSUP
5	0-7000	101 133 LSUS	103 131 LSUS	103 131 LSUS7/P	121 131 LSUS
5	0-8000	101 133 LSUW	103 131 LSUW	103 131 LSUW7/P	121 131 LSUW
Instruction Book: 4555K10P0701					

Switchboard Instruments



AB-40
Metal Case



AB-40
Plastic Case

AC Voltmeters

Rating (Volts)	Scale (Volts)	AB-14 Cat. No.	AB-40 Metal Case	AB-40 Plastic Case	AB-16 Cat. No.
Self-Contained, 50/60 Hz					
150	0-150	101 023 PZPZ	103 021 PZPZ	103 021 PZPZ7/P	121 021 PZPZ
250	0-250	101 023 RSR5	103 021 RSR5	103 021 RSR57/P	121 021 RSR5
300	0-300	101 023 RXRX	103 021 RXRX	103 021 RXRX7/P	121 021 RXRX
500	0-500	101 023 SFSF	103 021 SFSF	103 021 SFSF7/P	121 021 SFSF
600	0-600	101 023 SJSJ	103 021 SJSJ	103 021 SJSJ7/P	121 021 SJSJ
750▲	0-750	**	103 021 SMSM	103 021 SMSM7/P	121 021 SMSM
Transformer-Rated, 50/60 Hz (see Potential Transformers)					
150	0-300	101 023 PZRX	103 021 PZRX	103 021 PZRX7/P	121 021 PZRX
150	0-600	101 023 PZSJ	103 021 PZSJ	103 021 PZSJ7/P	121 021 PZSJ
150	0-750	101 023 PZSM	103 021 PZSM	103 021 PZSM7/P	121 021 PZSM
150	0-3000	101 023 PZUA	103 021 PZUA	103 021 PZUA7/P	121 021 PZUA
150	0-5250	101 023 PZUL	103 021 PZUL	103 021 PZUL7/P	121 021 PZUL
150	0-6000	101 023 PZUP	103 021 PZUP	103 021 PZUP7/P	121 021 PZUP
150	0-9000	101 023 PZUY	103 021 PZUY	103 021 PZUY7/P	121 021 PZUY
150	0-15kV	101 023 PZWZ	103 021 PZWZ	103 021 PZWZ7/P	121 021 PZWZ
150	0-18kV	101 023 PZXE	103 021 PZXE	103 021 PZXE7/P	121 021 PZXE
150	0-45kV	101 023 PZXU	103 021 PZXU	103 021 PZXU7/P	121 021 PZXU
150	0-150kV	101 023 PZYR	103 021 PZYR	103 021 PZYR7/P	121 021 PZYR
250	0-600V	101 023 RSSJ	103 021 RSSJ	103 021 RSSJ7/P	121 021 RSSJ
Expanded Scale, Self-Contained, 50/60 Hz					
110-130	110-130	**	103 071 PNPn	103 071 PNPn7/P	121 071 PNPn
Expanded Scale, Transformer Rated, 50/60 Hz					
110-130	†	**	103 071 PN . . *	103 071 PN . . 7/P*	121 071 PN . . *
Rectifier Type, 1.5% Accuracy, 20 to 3000 Hz					
15	0-15	**	*	*7/P	*
30	0-30	**	*	*7/P	*
150	0-150	**	*	*7/P	*
150	†	**	*	*7/P	*
300	0-300	**	*	*7/P	*
600	0-600	**	*	*7/P	*
Ground Detector Type — Single-Phase 50/60 Hz					
150	0-150	**	103 021 PZPZ	103 021 PZPZ7/P	121 021 PZPZ
150	†	**	103 021 PZ . *	103 021 PZ . *7/P	121 021 PZ . *
300	0-300	**	103 021 RXRX	103 021 RXRX7/P	121 021 RXRX
600	0-600	**	103 021 SJSJ	103 021 SJSJ7/P	121 021 SJSJ

▲ UL version not available.

* Order by description. Specify P.T. (Potential Transformer) ratio if used, and scale desired.

** High shock version not available.

† Scale per requisition. AB/DB models have maximum 4 digits as standard.

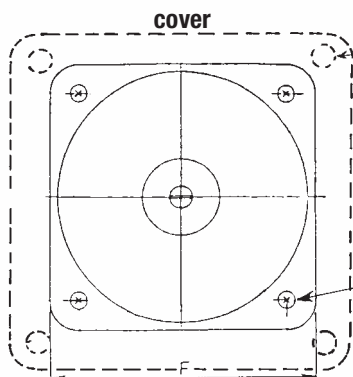
Instruction Book: 4555K10P0701, Outline Dimensions: See page 9

YOKOGAWA

Switchboard Instruments

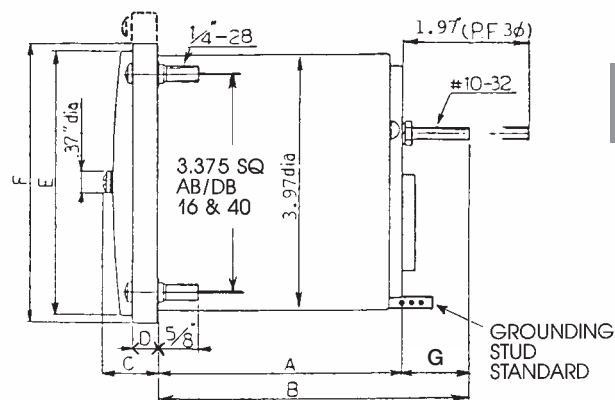
Dimensions and Panel Drilling for AB/DB 16 & AB/DB 40 (Metal Case)

Short Case



AB/DB 16 COVER SCREWS

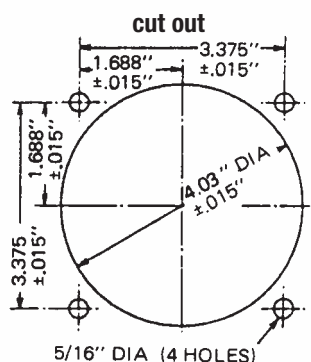
AB/DB 40 COVER SCREWS



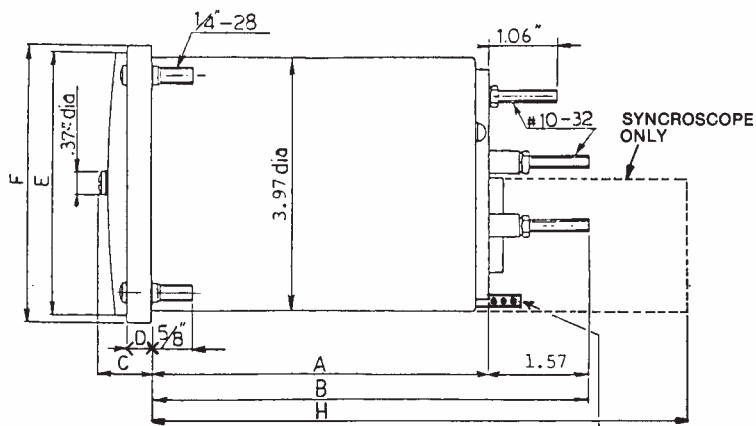
Short Case Dimensions (Inches)

	AB / DB-40			AB/ DB-16	
	AC V/A — DC V/A Frequency Temperature Tachometer	AC V/A — DC V/A Extra Short Case	Power Factor 1Φ (3Φ3w/4w)	AC V/A — DC V/A Frequency Temperature Tachometer	Power Factor 1Φ (3Φ3w/4w)
A	3.79	2.89	3.79	3.75	3.75
B	4.85	3.41	4.85 (5.76)	4.81	4.81 (5.72)
C	0.86	0.86	0.86	0.88	0.88
D	0.32	0.32	0.32	0.38	0.38
E	4.09	4.09	4.09	8.20	8.20
F	4.33	4.33	4.33	8.69	8.69
G	1.06	0.52	1.06	1.06	1.06

Long Case



Cut-out and Panel Drilling Dimensions.
AB/DB 40 & 16



Long Case Dimensions (Inches)

	AB / DB-40		AB/ DB-16	
	Wattmeter Varmeter*	Synchroscope	Wattmeter Varmeter	Synchroscope
A	5.22	5.22	5.19	5.19
B	6.79	6.29	6.76	6.25
C	0.86	0.86	0.88	0.88
D	0.32	0.32	0.38	0.38
E	4.09	4.09	8.20	8.20
F	4.33	4.33	8.69	8.69
H	—	8.06	—	8.03

*Short case dimensions in first column above apply to varmeter for use with external phase shifters (10332—, 10377—, 10334—, 10379—.)

Switchboard Instruments



UL recognized:
File E91703

Type 180 Single Edgewise

Specifications

Accuracy Class:

Standard — $\pm 1.5\%$ of full-scale span for DC horizontal and vertical and AC horizontal.

$\pm 2\%$ for AC vertical.

Suppressed zero (mechanical) — $\pm 2\%$ of full scale span.

AC Rectifier-type Ammeters and Voltmeters—
Standard $\pm 2.5\%$ on 60-Hertz sine wave at 25° C.

Scales (Standard):

Ranges — (see following page)

Length — 4.448 inches

Degrees rotation 60 degrees

Color — Background - White

Numerals - Black

Legend - Black

Scale Divisions - Black

Numeral Height — 1/4 inch

Illumination — Refer to factory

Number of scale divisions — 100 maximum

Scale linearity — DC - linear

AC - non-linear

Maximum number of letters (counting spaces as letters) on vertical meters, 25;
on horizontal meters, 30.

Repeatability: $\pm 2\%$ of full scale

Overload:

Sustained — 120% for AC and DC voltmeters.

120% for 8 hours for AC and DC ammeters.

Momentary — 10 times rated current applied for 10 consecutive intervals of 1/2 second with one-minute intervals between successive applications for AC and DC ammeters. Mechanical overload same as momentary overload for ammeters.

Response Time:

AC — 4 seconds maximum

DC — 2.5 seconds maximum ≥ 1 mA

4 seconds maximum < 1 mA

Overshoot:

40% full scale angle maximum

Insulation Level:

Operating — 600 volts

Hi-pot — 5000 volts rms terminals to case for one minute

Mounting Position For Both Horizontal and Vertical Meters:

Mounting to a Vertical Panel is standard.

If other mounting angle is necessary, then angle must be specified and instrument calibrated for the specified angle.

Operating Environment:

Temperature (Standard) — (-4° to +150°F)

(-20°C to +65°C)

Pressure — Atmospheric

Shock — 50 G's

Corrosive fumes, salt-spray (Refer to factory)

Maximum magnetic field without external shielding —

(Standard) - DC or AC, 1 gauss for 3% accuracy

(Optional) - Refer to factory for recommendations to minimize errors

Case:

Material — Base Polycarbonate

Finish — Spray painted

Color — (Standard) - Aluminum

(Optional) - Black

Pointer color — White

Window and Case — Polycarbonate

Magnetic Shielding — DC, self-shielding
AC, soft iron shielding

Gasketed cover (weather resistant) standard

Type Terminals — Stud type

Movement:

AC — Iron vane pivot and jewel

DC — D'arsonval type taut-band

Burden Data

Type	Impedance in Ohms	Effective Resistance in Ohms	Inductance in Henries	Volt-amperes	Watts	Reactive Volt-amperes	Power Factor
120-VOLT, 60-HERTZ POTENTIAL CIRCUIT							
Voltmeters	18,667	18,658	1.546	1.205	1.204	0.0545	0.9993
5-AMPERE, 60-HERTZ CURRENT CIRCUIT							
Ammeters	0.00832	0.00792	6.75x10-6	0.208	0.1978	0.064	0.9520

Switchboard Instruments

Type 180 Optional Features

Scale Variations

1. Blank Scales
2. Special marked scales (maximum 100 divisions; Ref. Notes 3 and 4)
3. Special Legends (Ref. Notes 3 and 4)
4. Colored markings, lines, bars, etc.
5. Black scale with white markings
6. Zero-center Scale DC instruments

Ratings and Calibration

7. Unlisted ratings. Contact factory for other than listed ratings.
8. Offset-zero scale (DC meters only)
9. Special calibrations in accordance with data supplied by customer
10. Calibration for use on other than vertical panel
11. Calibration for use on 400 Hertz or other unlisted frequency.
12. High-sensitivity voltmeters (See Note 2)
13. Special-terminal resistance
14. Internal mounted rheostat
15. Rectifier-type voltmeters 2.5 percent.
16. 1 percent accuracy (DC only)
17. Suppressed zero with operable zero set (DC only) (See Note 1)

Construction

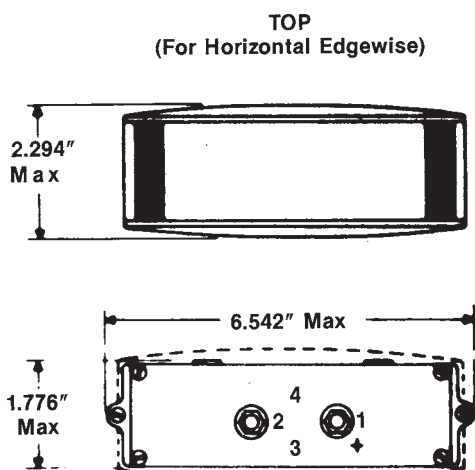
18. Internal illumination
19. Red pointer (Day-glo)
20. Anti-glare window
21. Black trim case
22. Component mark for Canada. Add "/CSA" to suffix of catalog number.

Notes:

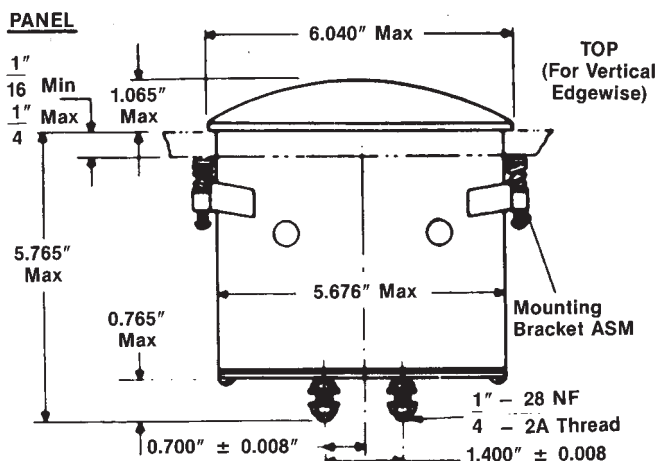
1. Suppressed zero — Available only on DC models up to a maximum suppression of 20 percent of full-scale value. Note: Accuracy is affected on suppressed-zero instruments.
2. High-sensitivity voltmeters — DC voltmeters can be offered up to 20,000 ohms/volt. Voltmeters of high sensitivity draw less current from the circuit and are used on applications where the circuit current is so low that instrument resistance will appreciably affect circuit operation.
3. Special legends and/or scales may be obtained by special order. Maximum number of letters (counting spaces as letters) on vertical instruments is 25; on horizontal instruments, 30. Exact wording must be clearly indicated as to spelling, abbreviation, spacing, etc.

4. Type 180 scales and legends are individual parts separated by a space for the pointer. Only one set of divisions can be marked on a scale.
5. No charge for electrical legends.

Dimensions and Panel Cutout



Dimensions for Type 180 Instruments
DWG B3147K22



Switchboard Instruments

1

ANALOG/DIGITAL SWITCHBOARDS - DUAL VUE

DUAL-VUE Features:

- Analog and Digital Displays
- Drop-in replacement for existing switchboards
- AC/DC volts & amps
- Custom scales and legends available

DUAL-VUE Specifications:

- DCV, DCA, ACV, and ACA electrical input ratings
- Power Supply: 120v standard, 240v optional
- Analog Display: Taut-band silicon damped
- Digital Display: 3.5 digit, 7 segment, 0.56" high
- Digital Color: Red, blue, or green
- Analog Accuracy: $\pm 1\%$ of full deflection
- Digital Accuracy: AC $\pm 1\%$ of reading ± 3 counts
- Digital Accuracy: DC $\pm 1\%$ of reading ± 2 counts



DIGITAL SWITCHBOARDS - 2490 SERIES PLUS

2490 SERIES PLUS Features:

- Retrofit into existing switchboards
- Single, dual, or triple display
- Inputs: ACV, ACA, Frequency, Watts, Vars, PF, PA, etc
- True RMS / Accuracy of $\pm 2\%$ of reading, $\pm 1\%$ of full scale
- PT ratings up to 1250:1 & CT ratings up to 5000:1
- Analog output proportionate to the primary
- Pushbutton setting switches
- Communications options (RS485)
- Auxiliary power options (24, 48, 125 VDC)



New Big Look



Type 250 and 254
New Big Look

Specifications

Accuracy: All DC and AC iron-vane; $\pm 2\%$ of full-scale. AC rectifier type; $\pm 3\%$ of full scale (with 60 Hz sine wave at 25° C). When standard 60 Hz iron vane ammeters are used at the extreme limits of 25 or 400 Hz, additional error (approx. .75%) may be experienced. Expanded-scale voltmeters; $\pm .5\%$ of full scale value.

ANSI Specification: All meters meet ANSI Specifications C-39.1

Overload: Voltmeters (AC and DC) - 50% momentary, 20% sustained. Ammeters (AC and DC) momentary: 10 times the rated current for 10 consecutive intervals of .5 second with a 1 minute interval between successive applications; sustained: 20% for six hours.

Scale Data: 90 degree rotation.

Scale Length:

Size	New Big Look
1½"	1.40"
2½"	2.06"
3½"	2.88"
4½"	3.93"

Insulation Level: All meters (except 1½"), 2600 VRMS Hi-pot, 1½" 1500 VRMS Hi-pot.

Burden Data: AC ammeter-5 amps, 0.5 va, Max. 0.5 power-factor lagging. AC voltmeter - unity power factor.

Response Time and Overshoot:

Response time: 3 seconds (max.) for 2½", 3½", 4½" size for microammeters: 2 seconds (max.) for all other DC ratings, and 2.5 seconds (max.) for AC ratings. Maximum of 40% overshoot.

Dimensions: See page 18

How To Order

To order New Big Look panel meters use the appropriate catalog numbers provided in the tables. Taut band & AC I/V instruments have a 250 prefix number. Pivot & Jewel instruments have a prefix of 254.

Ordering Examples:

1. 2½", 300 V DC Voltmeter, zero left, taut band - 250 220 RXRX
2. 2½", 300 V DC Voltmeter, zero left, pivot & jewel, 254 style - 254 220 RXRX
3. 2½", 300 V AC (Iron Vane), pivot & jewel - 250244 RXRX

Notes:

Pivot & jewel instruments are not available in 1½" size.

Severe-duty meters are available to meet UL 1437 and IEC 144 requirements. **UL version, with flame retardant window and base, is not offered in 1½".** IEC version is not offered in 1½" and 4½". To order, add "UL" or "IEC" after catalog number, or contact factory.

For ratings and scales not listed contact factory.

Horizon Line



Type 251, 255
Horizon Line

Specifications

Accuracy: All DC and AC iron-vane; $\pm 2\%$ of full-scale. AC rectifier type; $\pm 3\%$ of full scale (with 60 Hz sine wave at 25° C). When standard 60 Hz iron vane ammeters are used at the extreme limits of 20 or 400 Hz, additional error (approx. .75%) may be experienced. Expanded-scale voltmeters; $\pm .5\%$ of full scale value.

ANSI Specification: All meters meet ANSI Specifications C-39.1

Overload: Voltmeters (AC and DC) - 50% momentary, 20% sustained. Ammeters (AC and DC) momentary: 10 times the rated current for 10 consecutive intervals of .5 second with a 1 minute interval between successive applications; sustained: 20% for six hours.

Scale Data: 90 degree rotation.

Scale Length:

Size	Horizon Line
1½"	1.50"
2½"	2.06"
3½"	2.88"
4½"	3.93"

Insulation Level: All meters (except 1½"), 2600 VRMS Hi-pot, 1½" 1500 VRMS Hi-pot.

Burden Data: AC ammeter-5 amps, 0.5 va, max. 0.5 power-factor lagging. AC voltmeter-unity power factor.

Response Time and Overshoot:

Response time: 3 seconds (max.) for 2½",

3½", 4½" size for microammeters: 2 seconds (max.) for all other DC ratings, and 2.5 seconds (max.) for AC ratings. Maximum of 40% overshoot.

Dimensions: See page 19-20

How To Order

To order Horizon Line panel meters use the appropriate catalog numbers provided in the tables. Taut band instruments have a 251 prefix number. Pivot & jewel instruments have a 255 prefix number, except AC Iron Vane prefix which is 251.

Ordering Examples:

1. 2½", 300 V DC Voltmeter, zero left, taut band - 251 220 RXRX
2. 2½", 300 V DC Voltmeter, zero left, pivot & jewel, 255 220 RXRX
3. 2½", 300 VAC (Iron Vane) pivot & jewel - 251244 RXRX

Severe-duty meters are available to meet UL 1437 requirements. UL version, with flame retardant window and base, is not offered in 1½". To order, add "UL" after catalog number, or contact factory. For ratings and scales not listed contact factory.

AC Frequency Meters

Available in Horizon Line Or New Big Look

1

Size			1½	2½	3½	4½
Voltage	Center Frequency Hertz	Scale Hertz	Cat. No.	Cat. No.	Cat. No.	Cat. No.

AC FREQUENCY — PIVOT AND JEWEL, SELF-CONTAINED, ACCURACY ±3 PERCENT OF SPAN; I.E., 0.3 Hz FOR 45-55 AND 55-65, AND 1.2 Hz FOR 380-420 RANGE

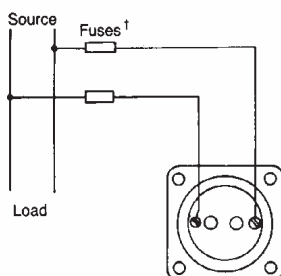
120	50	45-55		250 AGAG	350 AGAG	450 AGAG
120	55	45-65		250 AJAJ	350 AJAJ	450 AJAJ
120	60	55-65		250 ANAN	350 ANAN	450 ANAN
208	50	45-55	Choose prefix 254 or 255	250 GGGG	Choose prefix 254 or 255	450 GGGG
208	55	45-65		250 GJGJ		450 GJGJ
208	60	55-65		250 GNGN		450 GNGN
208	400*	380-420		250 HKHK		450 HKHK
240	50	45-55		250 DGDG	350 DGDG	450 DGDG
240	55	45-65		250 DJDJ	350 DJDJ	450 DJDJ
240	60	55-65		250 DNDN	350 DNDN	450 DNDN
240	400*	380-420		250 EKEK	350 EKEK	450 EKEK

NOTE: For non-listed voltages, frequency ranges or special calibration (accuracy ±2% of span) contact factory.

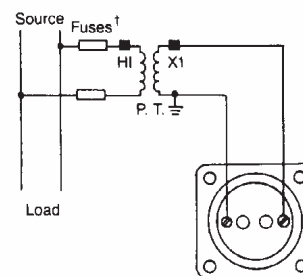
*400 Hz version has taut band suspension.

External Connections, Types 254 and 255 Frequency Meters

† Fuses are furnished by user if required.

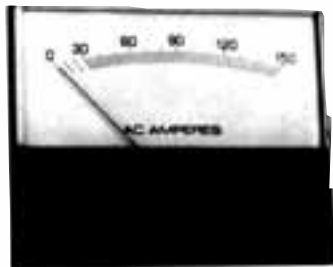


Without Potential Transformer



With Potential Transformer

Stylist Series



Specifications

Accuracy: All DC and AC ironvane; ±2% of fullscale. AC rectifier type; ±3% of fullscale (60Hz sine wave) Expanded scale voltmeters ±5% of fullscale. Special order DC with mirror back scale (DC only) 3 1/2 + 4 1/2" Available @ +1%.

ANSI Specifications: All meters meet ANSI Specifications C-39.1

Overload: Voltmeters (AC + DC) - 50% momentary, 20% sustained. Ammeters (AC + DC) momentary; 10 times the rated current for 10 consecutive intervals of .5 seconds with a 1 minute interval between successive applications; sustained; 20% for six hours.

Scale Data:

ARC	90°	95°
METER SIZE	AC IRON VANE	TAUT BAND/ PIVOT & JEWEL
1 1/2"	—	1.66"
2 1/2"	2.15"	2.29"
3 1/2"	2.70"	2.85"
4 1/2"	3.80"	4.01"

Insulation Level: 2600V/1 min.
(2 1/2"=4 1/2")
(1500V/1 min. (1 1/2"))

Response Time:
3 seconds (Max.) - Microammeters
2 seconds (Max.) - All other DC ratings
2.5 seconds (Max.) - All AC ratings
Maximum 40% overshoot

Dimensions: See page 21

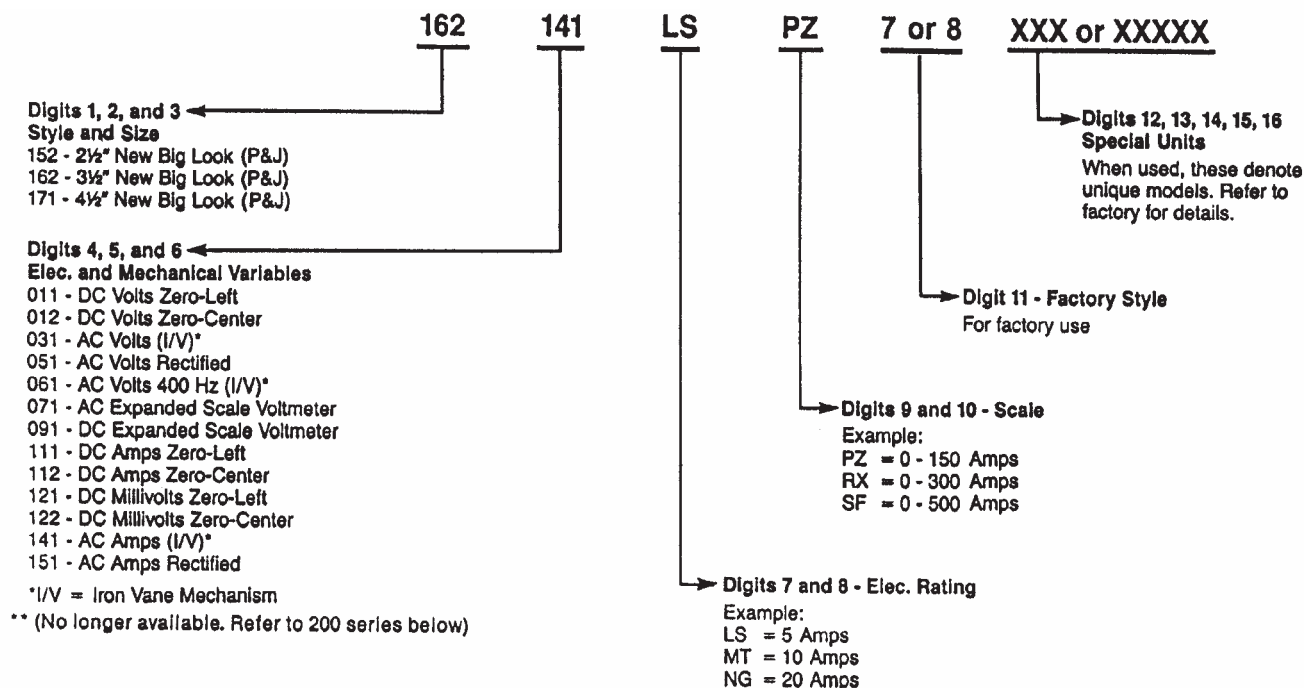
Burden Data: AC Ammeter 5 amps.
0.5VA, Max. .5 Power factor lagging, AC voltmeter - unity power factor.

Notes: Severe-duty meters are available to meet UL 1437 requirements in 2 1/2"-4 1/2" sizes. To order, add "/UL" after catalog number, or contact factory.

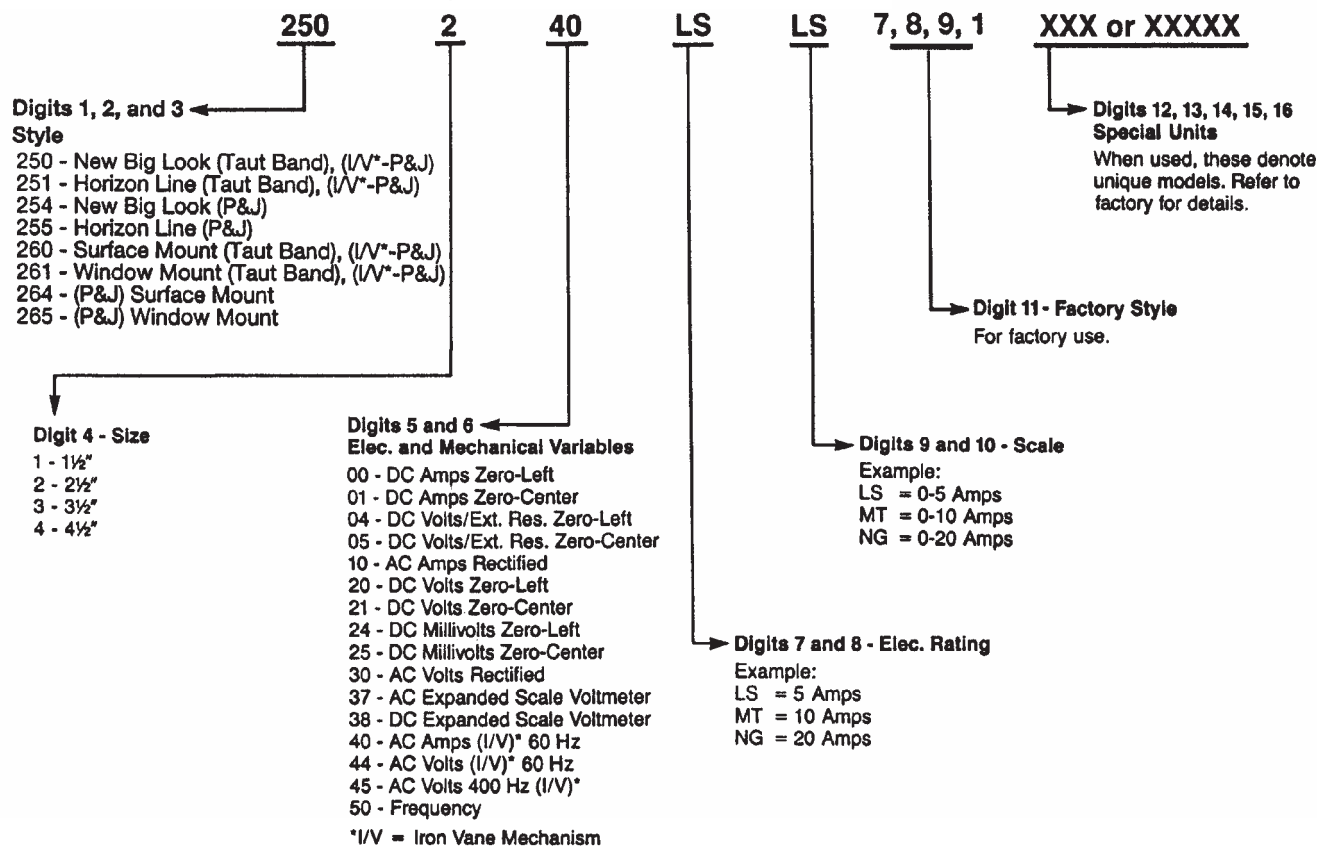
YOKOGAWA ◆

Key to 100-Prefix Catalog Numbers

1



Key to 200-Prefix Catalog Numbers



Elapsed Time Meters

1



Back of Panel Unmounted



New Big Look Panel Mounted



Square Case



Round Case



Conduit Case

Specifications

Accuracy:

Matches frequency control of power system.

Vibration Shock:

Meets ANSI Specification C39.1

Materials: Case of clear LEXAN®, frame of Noryl®, brass terminal studs, Lucite® Front covers.

Safety: Type 240 elapsed-time meters are recognized under the Component Program of Underwriters' Laboratories. (UL File #E44857)

Input Range: All Type 240 models available to operate on 120 or 208/240 volts AC, 50 or 60 Hertz; and 480 volts AC, 60 Hertz.

Sealing: All non-reset Type 240 models are weather resistant. Sealed window and no-through screw holes for flange or back-of-panel mounting protect motor, counter, and gearing from rain or panel wash-down.

Presentation: 6-digit counter in hours and tenths of hours or minutes and tenths of minutes.

Insulation Level: Operating at 120, 208, 240 or 480 volts, AC, will pass Hi-pot of 2000 Vrms for one minute.

Burden: 3 Watts typical

Dimensions: See page 23-24

Motor: Telechron, Model S-1.

Features:

- New back-of-panel model
- 2 1/2" and 3 1/2" New Big Look models
- 2 1/2" and 3 1/2" Round and Square models
- Conduit-case models
- Complete interchangeability physically and electrically with GE Types 235 and 236 models.
- Optional 3 stud mounting option is available on 3 1/2" New Big Look style 240 meters only.

Motor Volt AC	Nonreset Type		Reset Type	
	Register in Minutes	Register in Hours	Register in Minutes	Register in Hours

2 1/2-INCH NEW BIG LOOK — 60 Hz

120	240 213 AAAB	240 211 AAAB	240 214 AAAB	240 212 AAAB
208/240	240 213 ABAB	240 211 ABAB	240 214 ABAB	240 212 ABAB
480	240 213 ACAB	240 211 ACAB	240 214 ACAB	240 212 ACAB

3 1/2-INCH NEW BIG LOOK — 60 Hz

120	240 313 AAAB	240 311 AAAB	240 314 AAAB	240 312 AAAB
208/240	240 313 ABAB	240 311 ABAB	240 314 ABAB	240 312 ABAB
480	240 313 ACAB	240 311 ACAB	240 314 ACAB	240 312 ACAB

SQUARE CASE 2 1/2-INCH — 60 Hz

120	240 313 AAAD	240 611 AAAD	240 614 AAAD	240 612 AAAD
208/240	240 313 ABAD	240 611 ABAD	240 614 ABAD	240 612 ABAD
480	240 313 ACAD	240 611 ACAD	240 614 ACAD	240 612 ACAD

SQUARE CASE 3 1/2-INCH — 60 Hz

120	240 713 AAAD	240 711 AAAD	240 714 AAAD	240 712 AAAD
208/240	240 713 ABAD	240 711 ABAD	240 714 ABAD	240 712 ABAD
480	240 713 ACAD	240 711 ACAD	240 714 ACAD	240 712 ACAD

ROUND CASE 2 1/2-INCH — 60 Hz

120	240 633 AAAB	240 631 AAAB	240 634 AAAB	240 632 AAAB
208/240	240 633 ABAB	240 631 ABAB	240 634 ABAB	240 632 ABAB
480	240 633 ACAB	240 631 ACAB	240 634 ACAB	240 632 ACAB

ROUND CASE 3 1/2-INCH — 60 Hz

120	240 733 AAAB	240 731 AAAB	240 734 AAAB	240 732 AAAB
208/240	240 733 ABAB	240 731 ABAB	240 734 ABAB	240 732 ABAB
480	240 733 ACAB	240 731 ACAB	240 734 ACAB	240 732 ACAB

Elapsed Time Meters



BACK-OF-PANEL — 60 Hz

120	240 003 AAAA	240 001 AAAA	240 004 AAAA	240 002 AAAA
208/240	240 003 ABAA	240 001 ABAA	240 004 ABAA	240 002 ABAA
480	240 003 ACAA	240 001 ACAA	240 004 ACAA	240 002 ACAA

CONDUIT-MOUNTED CASE 2 1/2-INCH — 60 Hz

120	240 253 AA AF	240 251 AA AF		
208/240	240 253 AB AF	240 251 AB AF		
480	240 253 AC AF	240 251 AC AF		

=Conduit-mounted case and type 240 meter sold only as a unit. Replacement meters for conduit-mounted case models not available as a separate item. However, motors can be supplied as a renewal part.

50-Hertz ratings FOR NEW BIG LOOK

For 50 Hz service (not available at 480 volts) simply select the identical 60 Hz catalog number and change letters 7 & 8 as follows:

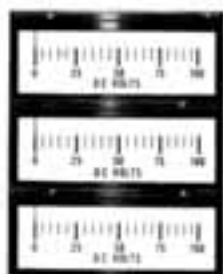
240213 ** Ab
 AA = 120V, 60 Hz
 AB = 208/240V, 60 Hz
 AC = 480V, 60 Hz
 AD = 120V, 50 Hz
 AE = 208/240V, 50 Hz
 AF = 480V, 50 Hz

OPTIONAL 3-STUD MOUNTING

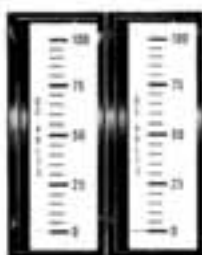
For 3-stud mounting option (31/2" New Big Look only) simply select the identical 4-stud catalog number and change letters 9 & 10 as follows:

240313AA **
 AB = Std 4 stud mounting
 AC = Optional 3 stud mounting

Type 185 Edgewise Panel Meters



Type 185
3 Stack Mounted



Type 185
2 Stack Mounted



Horizontal Type 185



Type 185
Vertical
Meter with Bezel

Features: Completely shielded case. No special calibration required for panel material — Dust-tight cases — Stack mounting of meters is possible with all sides of meter case flush — Optional bezel and mounting bracket for 1 - or 3-unit stack — Zero regulator provided in rear of case.

NOTE: Mounting hardware is not included.

Accuracy: DC meters +2% of full scale. AC rectifier type +3% (60 Hertz sine wave at 25°C).

ANSI Specification: All meters meet ANSI Specification C-39.1.

Overload:

Voltmeter — 50% momentary, 20% sustained.
 Ammeter — 900% momentary, 20% sustained.

Scale Data:

53 degrees rotation. Length — 1.785".

Insulation Level: 1800 Vrms Hi-pot.

Response Time:

3 seconds (max.) for microameters;
 2 seconds (max.) for all other DC ratings; and
 2.5 seconds (max.) for AC ratings.

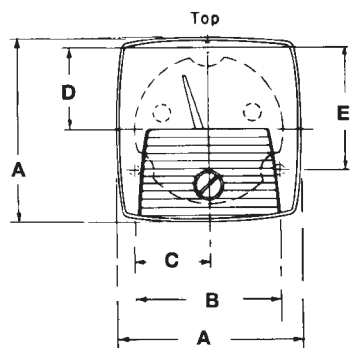
Overshoot: Maximum of 40%

Dimensions: See Page 22

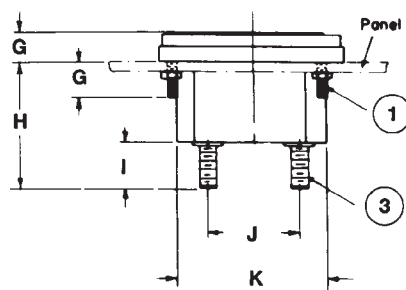
Bezel and Mounting Assembly	Type of Mounting	Cat. No.
Assembly includes — Bezel mounting bracket(s), bolts, nuts, washers, speed nuts	For mounting one meter only.....	4149K16G0778
	For stack mounting three meters.....	4149K16G0780

Dimensional Drawings

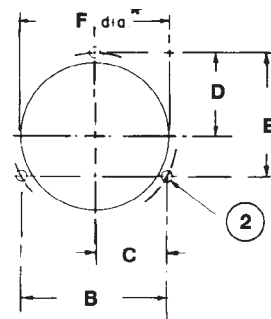
Fig. 2. New Big Look 2½-inch Types 250 & 254
*2.270 dia. with shield



A	B	C	D	E	F	G	H	I	J	K
2.69	2.112	1.056	1.219	1.829	2.17	.5	1.85	.67	1.318	2.15

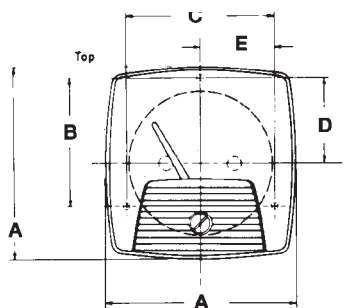


1. No. 4-40 NC 2A (3 Studs)
2. .140" dia. (No. 28) (3 holes)
3. ¼" - 28 NF 2A thd.

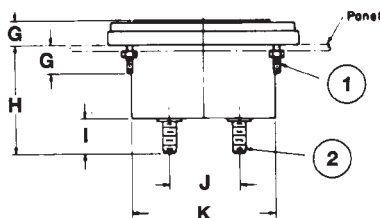


Panel Drilling

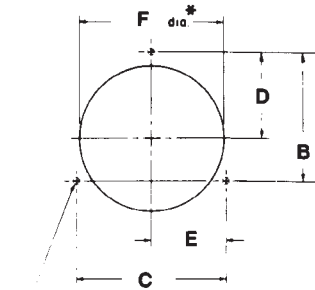
Fig. 3. New Big Look 3½-inch Types 250 & 254
*2.860 dia. with shield



A	B	C	D	E	F	G	H	I	J	K
3.5	2.373	2.74	1.582	1.37	2.72	.5	1.85	.64	1.318	2.7

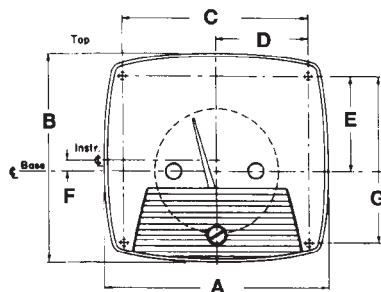


1. No. 4-40 NC 2A (3 Studs)
2. ¼" - 28 NF 2A thd.
3. .140" dia. (No. 28 dr.) (3 holes)

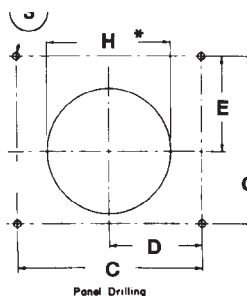


Panel Drilling

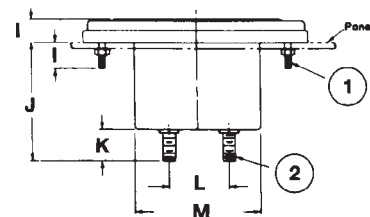
Fig. 4. New Big Look 4½-inch Types 250 & 254
*2.860 dia. with shield



A	B	C	D	E	F	G	H	I	J	K	L	M
4.85	4.41	4	2	2.031	.25	3.562	2.72	.5	1.85	.64	1.318	2.7



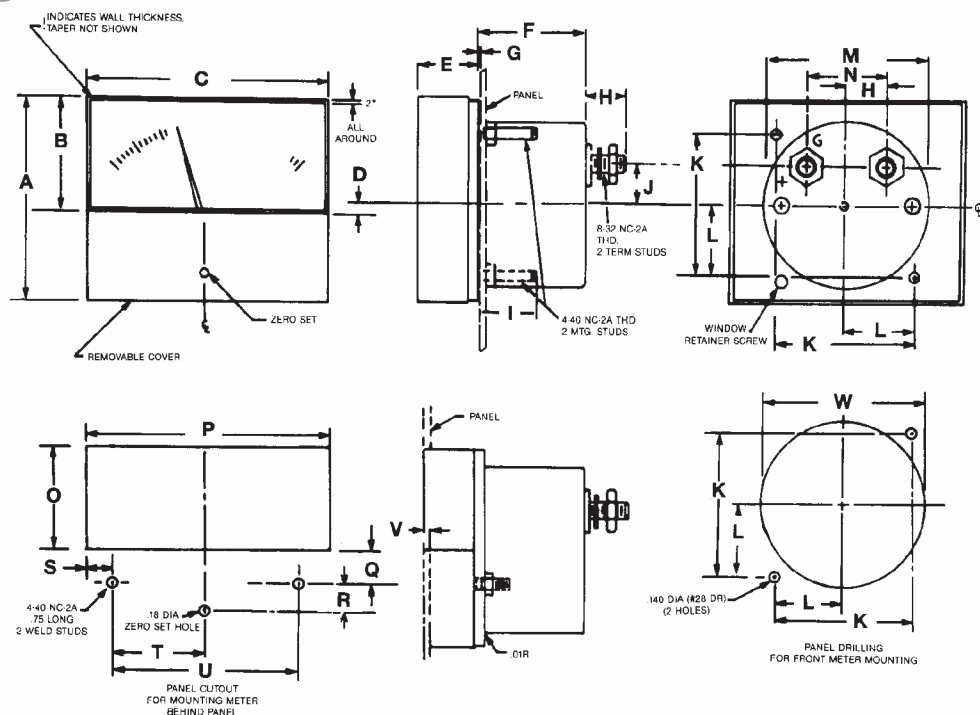
Panel Drilling



1. No. 4-40 NC 2A (4 Studs)
2. ¼" - 28 NF 2A thd.
3. .140" dia. (No. 28 dr.) (4 holes)

Dimensional Drawings

**Fig. 5. Horizon Line 1½ inch
Types 251 & 255**



A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1.86	1.036	2.19	.055	.5	.96	.008	.38	.5	.34	1.312	.656	1.510	.75	1.05	2.18	.356	.175	.24	.85	1.7	.06	1.53

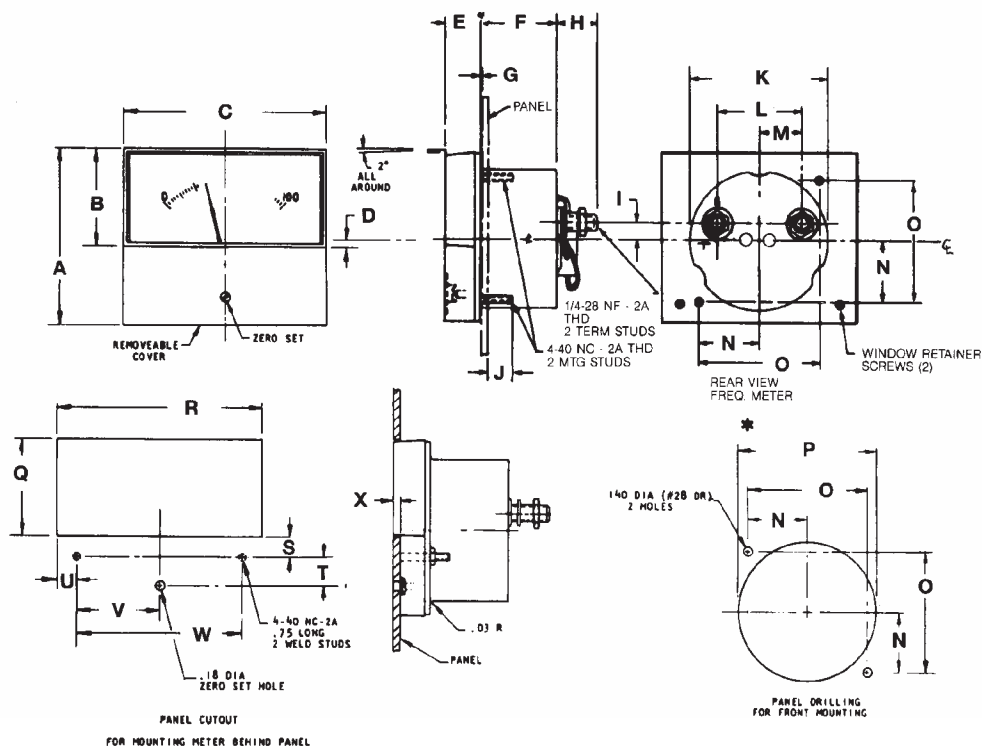
**Fig. 6. Horizon Line 2½ inch
Types 251 & 255
*2.270 dia. with shield**

A	B	C	D	E	F
2.66	1.46	3.12	.072	.56	1.18

G	H	I	J	K	L
.008	.63	.26	.5	2.17	1.32

M	N	O	P	Q	R
.66	.94	1.88	2.19	1.475	3.11

S	T	U	V	W	X
.296	.434	.305	1.25	2.5	.1



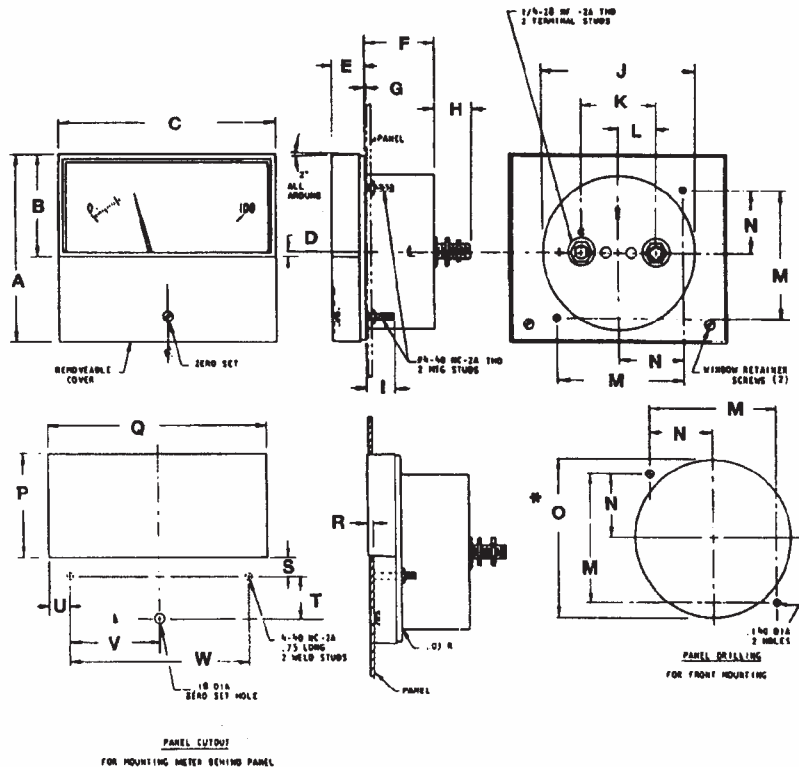
Dimensional Drawings

1

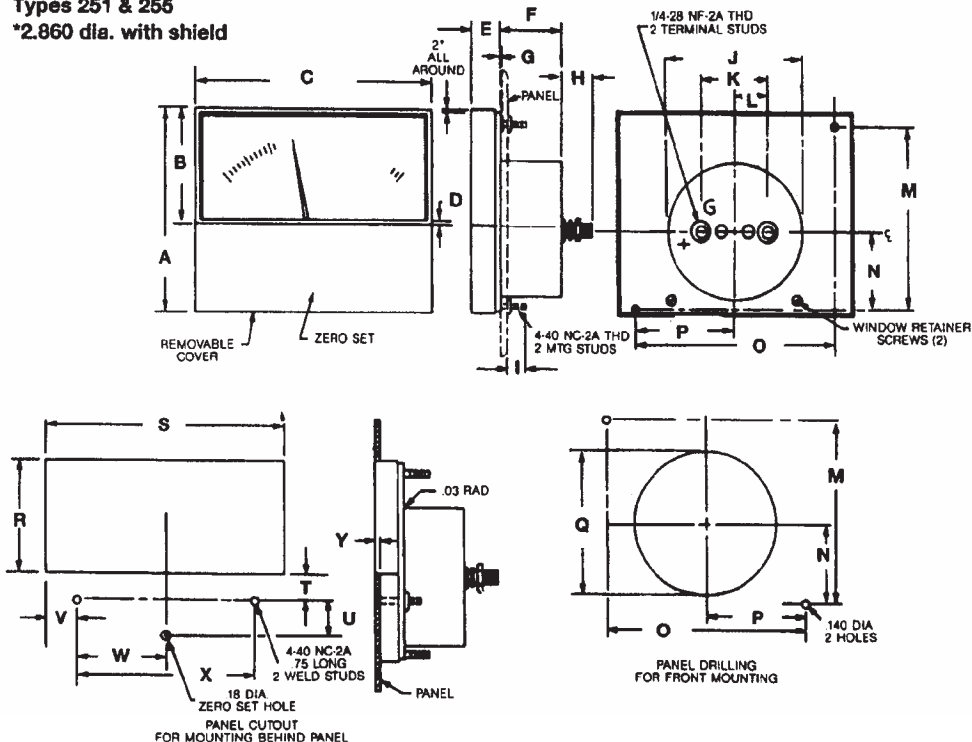
**Fig. 7. Horizon Line 3 1/4 inch
Types 251 & 255
*2.860 dia. with shield**

A	B	C	D	E	F	G	H	I	J	K
3.32	1.82	3.89	.082	.58	1.2	.008	.83	.5	2.7	1.32

L	M	N	O	P	Q	R	S	T	U	V	W
.66	2.25	1.125	2.72	1.836	3.88	.1	.298	.727	.360	1.578	3.166



**Fig. 8. Horizon Line 4 1/4 inch
Types 251 & 255
*2.860 dia. with shield**



A	B	C	D	E	F
4.18	2.2	4.73	.12	.59	1.2

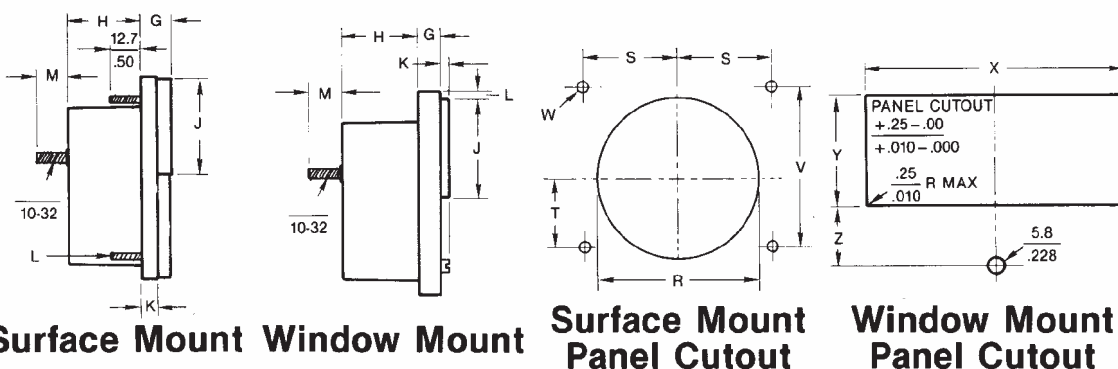
G	H	I	J	K	L
.006	.63	.5	2.7	1.32	.66

M	N	O	P	Q	R
3.562	1.531	4	2	2.72	2.216

S	T	U	V	W	X	Y
4.72	.518	.702	.805	1.75	3.5	.1

Dimensional Drawings

**Fig. 9. Stylist Series
Types 260, 261,
264 & 265**



Surface Mount Window Mount

**Surface Mount
Panel Cutout**

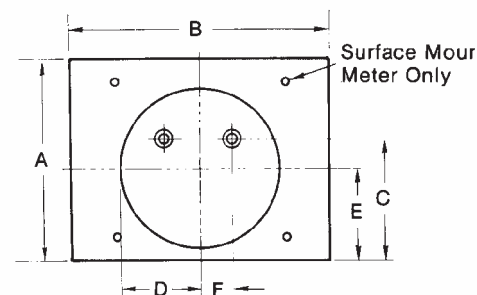
**Window Mount
Panel Cutout**

SURFACE MOUNT METERS

		A	B	C	D	E	F	G	H	J	K	L	M	R	S	T	V	W
1½"	in.	1.75	2.24	.99	.76	.83	.46	.34	1.30	.87	N/A	4-40	.25	.155	.66	.66	1.31	.125
2½"	in.	2.27	2.99	1.33	1.07	1.13	.56	.40	1.30	1.24	N/A	4-40	.50	2.22	.94	.94	1.88	.125
3½"	in.	2.87	3.70	1.44	1.33	1.44	.56	.41	1.30	1.55	N/A	4-40	.50	2.82	1.12	1.12	2.25	.125
4½"	in.	3.96	5.10	1.74	1.33	1.74	.56	.51	1.26	2.20	N/A	4-40	.50	2.82	2.00	1.54	3.56	.125

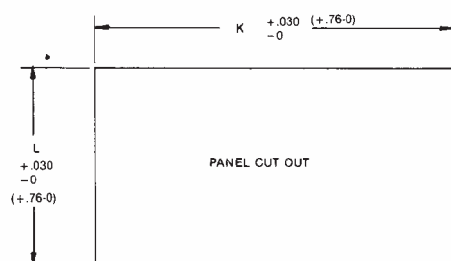
WINDOW MOUNT METERS

		A	B	C	D	E	F	G	H	J	K	L	M	X	Y	Z
2½"	in.	2.29	3.01	1.35	1.06	1.15	.56	.295	1.30	1.260	.145	.06	.50	2.900	1.270	.633
3½"	in.	2.90	3.73	1.45	1.33	1.45	.56	.32	1.30	1.585	.145	.07	.50	3.610	1.595	.804
4½"	in.	4.06	5.18	1.79	1.33	1.79	.56	.37	1.26	2.335	.145	.09	.50	5.020	2.345	.856



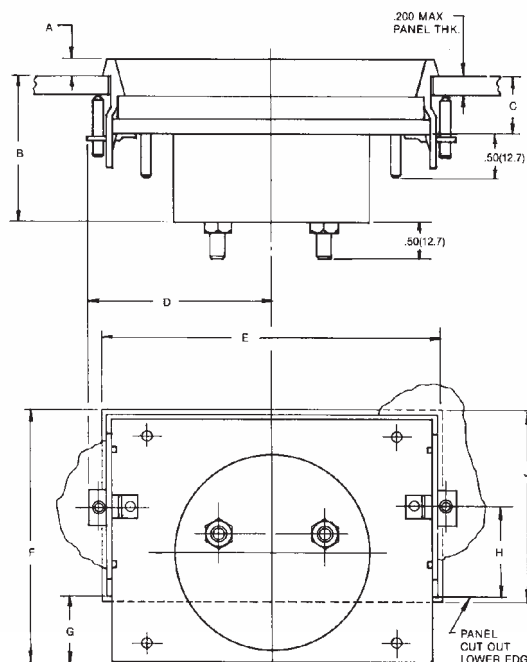
**Surface and
Window Mount Meters
rear view (combined)**

Fig. 10. Bezel Mounts of Surface Mount Stylist Meters



		A	B	C	D	E
2½"	in.	.13	1.87	.57	1.78	3.15
3½"	in.	.14	1.89	.59	2.14	3.85
4½"	in.	.12	2.05	.75	2.84	5.24

		F	G	H	J	K	L
2½"		2.30	.64	.79	1.74	3.00	1.594
3½"		2.94	.72	1.07	2.30	3.718	2.156
4½"		4.05	1.13	1.42	2.99	5.126	2.843



Dimensional Drawings

1

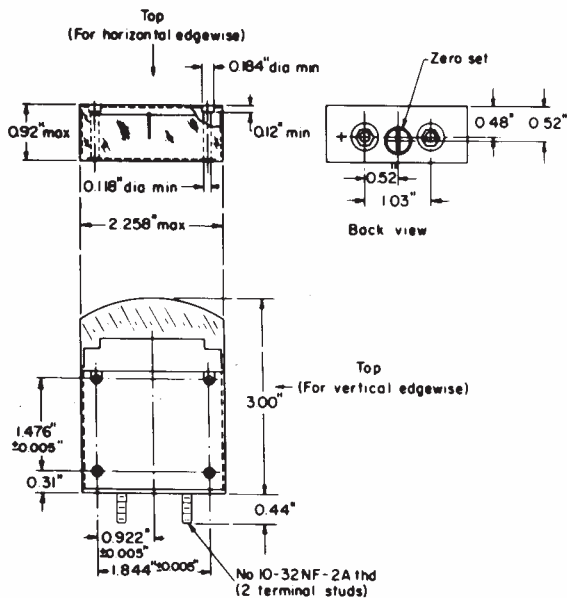


Fig. 11. Outline dimensions for Type 185 meters

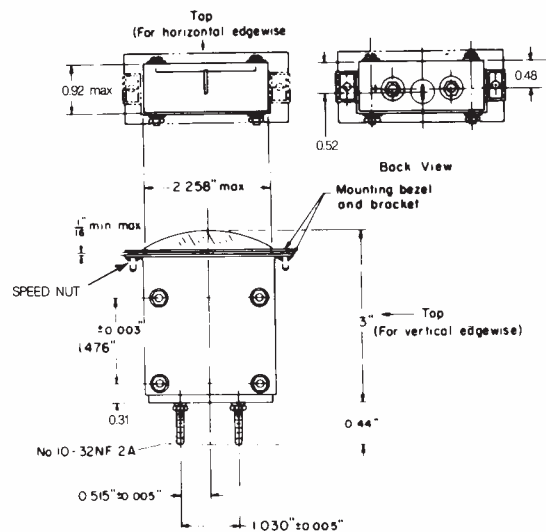


Fig. 12. Outline dimensions for Type 185 meter, with bezel and mounting bracket. See Fig. 15 & 16 below

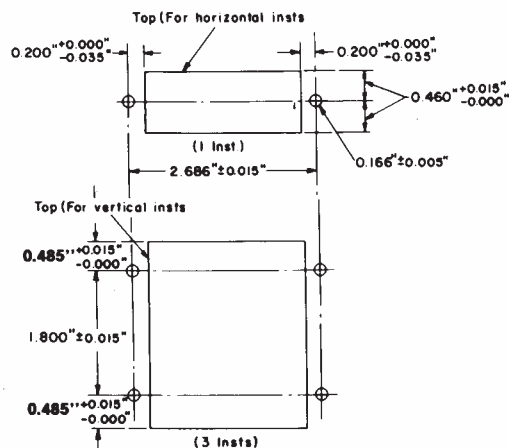


Fig. 13. Panel cutout dimensions for mounting 1 or 3 meters, with bezels and mounting brackets

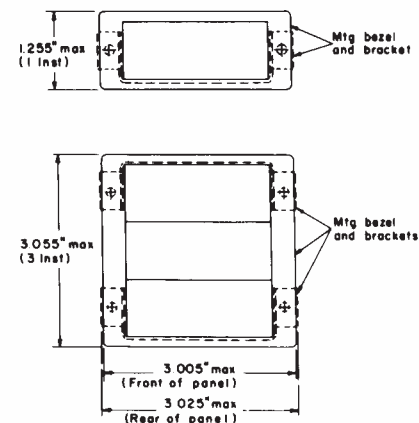


Fig. 14. Dimensions of bezels

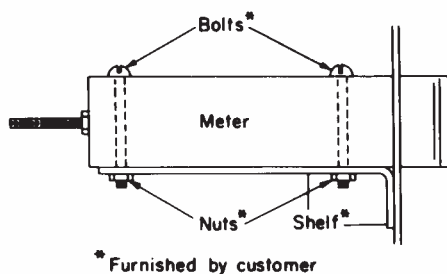


Fig. 15. Mounting of Type 185 meter on back of panel equipment

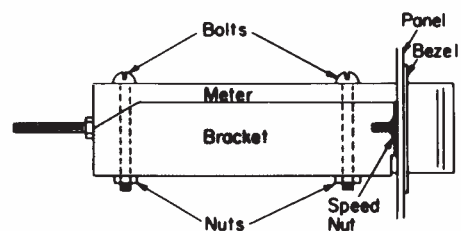


Fig. 16. Type 185 meter with bezel mounting bracket and hardware

Dimensional Drawings

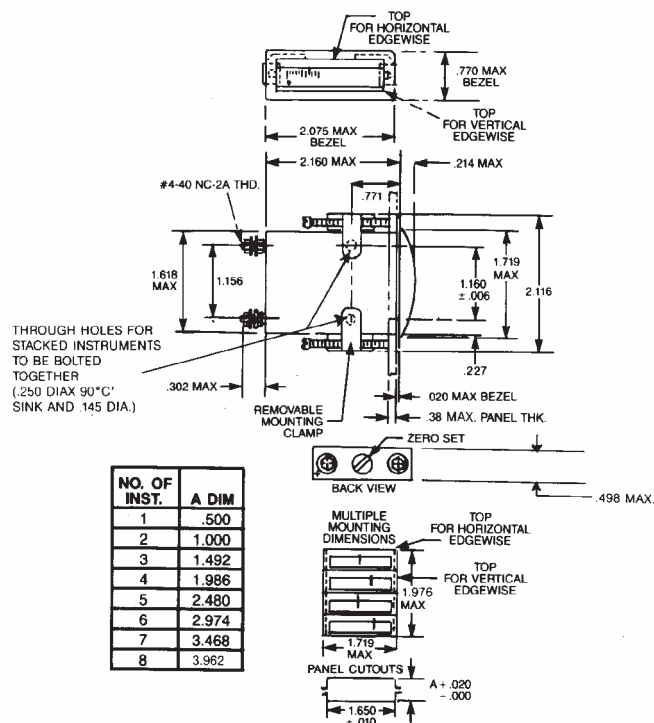


Fig. 17. Outline Dimensions for 1½-inch Type 286 Meter

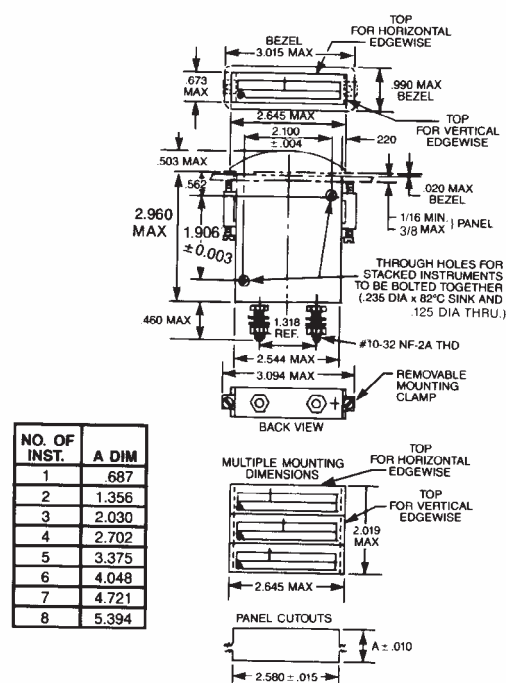


Fig. 18. Outline Dimensions for 2½-inch Type 287 Meter

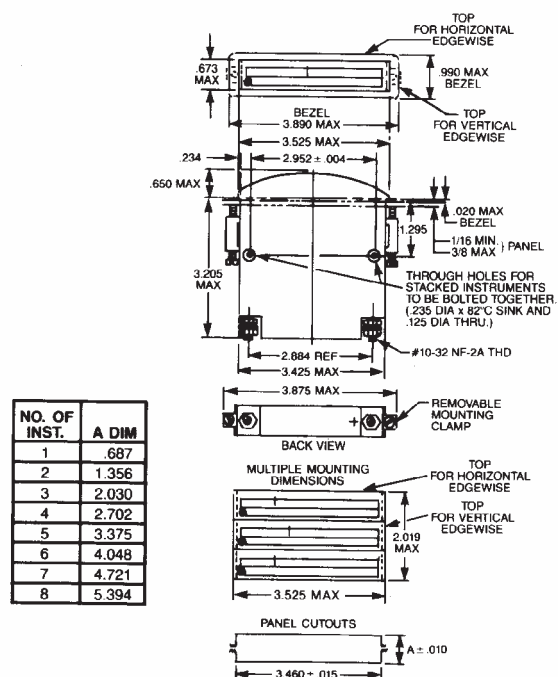
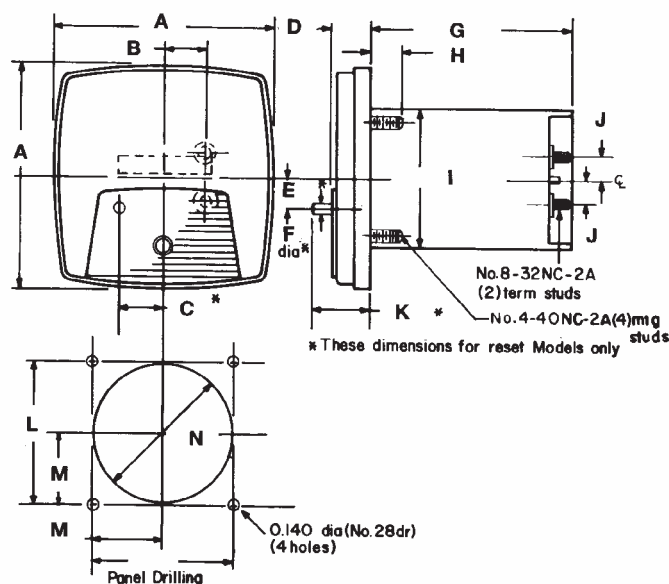


Fig. 19. Outline Dimensions for 3½ -inch Type 288 Meter



DIM SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N
2½ BL	2.7	.68	.72	.5	.48	.14	3.253	.5	2.215	.38	.80	1.88	.94	2.22
3½ BL	3.5	.68	.72	.5	.48	.14	3.253	.5	2.215	.38	.80	2.25	1.125	2.22

Fig. 20. New Big Look 2½ & 3½-inch Type 240

Dimensional Drawings

1

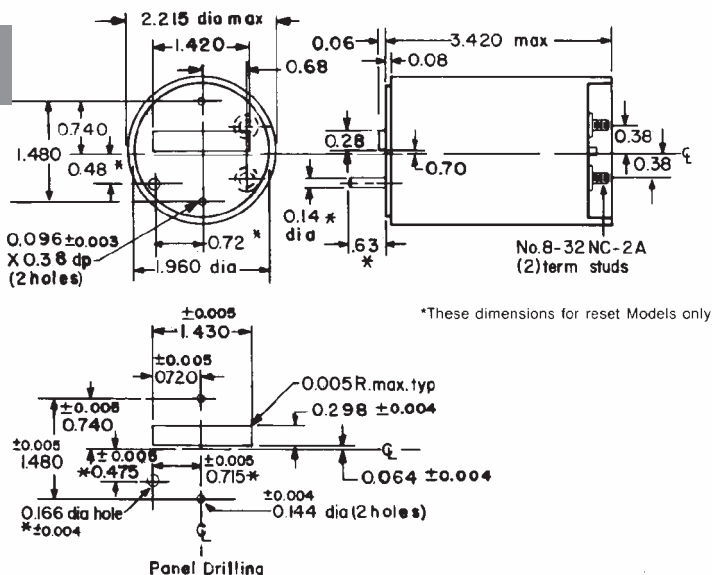
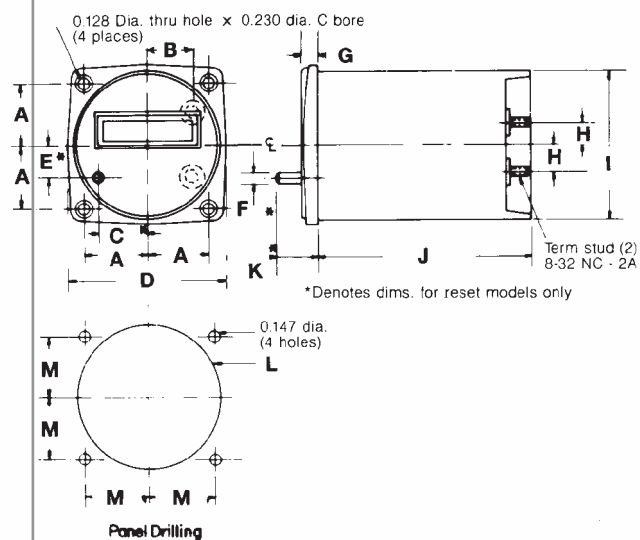
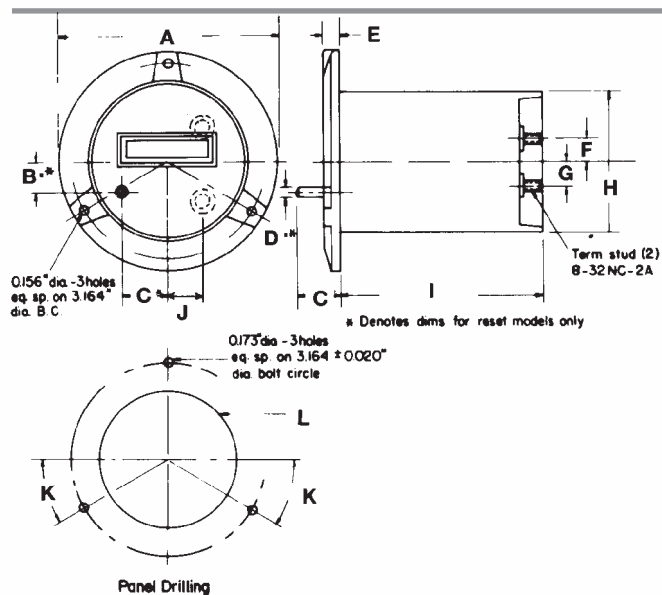


Fig. 21. Type 240 Back-of-panel model



	DIM	A	B	C	D	E	F	G	H	I	J	K	L	M
2%	sq.	.94	.68	.72	2.38	.48	.14	.25	.38	2.215	3.286	.76	2.22	.94
3%	sq.	1.12	.68	.72	3.0	.48	.14	.25	.38	2.215	3.286	.76	2.22	1.125

Fig. 22. 2½-inch Type 240 square case



DIM SIZE	A	B	C	D	E	F	G	H	I	J	K	L
2 1/2"	2.68	.48	.72	.14	.21	.38	.38	2.215	3.33	.68	30°	2.22
3 1/2"	3.51	.48	.72	.14	.22	.38	.38	2.215	3.32	.68	30°	2.22

Fig. 23. 2½-3½-inch Type 240 round case

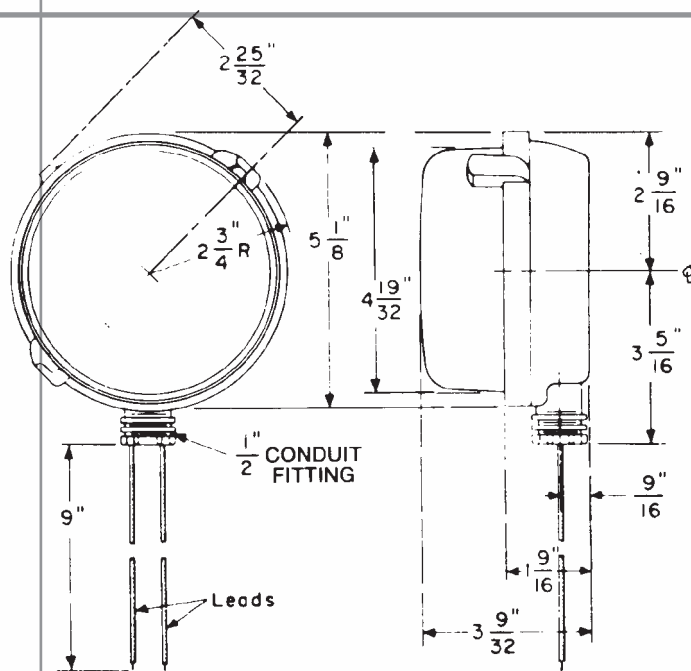


Fig. 24. Type 240 conduit-mounted case



Analog Panel Instruments

Analog Panel Meters



Wide-Vue Series

- Clear acrylic window for wide angle visibility
- Rugged black plastic case
- Black spade pointer for easy distant reading
- UL recognized
- Additional ranges available. Contact W.E.I.

AC and DC Meters

DC Voltmeters w/ Self-Shielding Meter Movement				
	Type 1212 1-1/2"	Type 1227 2-1/2"	Type 1327 3-1/2"	Type 1329 4-1/2"
Range	Cat. No.	Cat. No.	Cat. No.	Cat. No.
0-10	09541	09560	09740	09890
0-15	09542	09570	09750	09900
0-25	09543	09580	09760	09910
0-30	09544	09590	09770	09920
0-50	09545	09600	09780	09930
0-100	09546	09610	09790	09940
0-150	09547	09620	09800	09950
0-500*	09549	09640	09840	09990

*External multiplier furnished

DC Ammeters w/ Self-Shielding Meter Movement				
Range	Cat. No.	Cat. No.	Cat. No.	Cat. No.
0-1	02431	02440	02640	02820
0-1.5	---	02450	02650	02830
0-2	02432	02460	02660	02840
0-3	02433	02470	02670	02850
0-5	02434	02480	02680	02860
0-10	02435*	02490	02690	02870
0-15	02436*	02500	02700	02880
0-25	02437*	02510	02710	02890
0-30	---	02520	02720	02900
0-50	02438*	02530	02730	02910
0-100	---	02540*	02740*	02920*
0-200	---	02552*	02760*	02940*
0-300	---	02554*	02770*	02950*
0-500	---	---	02780*	02960*

*Requires external shunt. Order Separately on Page xx

DC Milliammeters w/ Self-Shielding Meter Movement				
Range	Cat. No.	Cat. No.	Cat. No.	Cat. No.
0-1	06163	06175	06310	06470
0-3	---	06180	06320	06480
0-5	06164	06190	06330	06490
0-15	06166	06210	06350	06502
0-20	---	06215	06360	06524
0-25	06167	06220	06370	06530
0-50	06168	06230	06380	06540
0-100	06169	06240	06390	06550
0-200	06171	06260	06410	06570
0-250	06172	06270	06420	06580
0-300	06173	06280	06430	06590
0-500	06174	06290	06440	06600

DC Microammeters w/ Self-Shielding Meter Movement				
Range	Cat. No.	Cat. No.	Cat. No.	Cat. No.
0-50	04294	04310	04380	04480
0-100	04295	04320	04390	04490
0-200	04296	04330	04400	04500
25-0-25	04298	---	04420	04520
50-0-50	04302	04350	04430	04530
100-0-100	04300	04351	04440	04540

Analog Panel Meters continued on next column

Taut Baud DC Microammeters w/Self-Shielding Meter Movement

	Type 1227T 2-1/2"	Type 1327T 3-1/2"	Type 1329T 4-1/2"
Range	Cat. No.	Cat. No.	Cat. No.
0-10	04303	04359	04459
0-25	04306	04371	04471
0-100	04321	04391	04491

AC Voltmeters w/ Iron Van Meter Movement

	Type 1257 2-1/2"	Type 1357 3-1/2"	Type 1359 4-1/2"
Range	Cat. No.	Cat. No.	Cat. No.
0-10	09670	10170	10270
0-25	09680	10190	10290
0-150	09700	10220	10320
0-300	09710	10240	10340
0-500	09715*	10250*	10350*

*Includes external multiplier

AC Ammeters with Iron Vane Meter Movement

Range	Cat. No.	Cat. No.	Cat. No.
0-1	02560	03130	03260
0-3	02575	03160	03290
0-5	02580	03170	03300
0-10	02590	03180	03310
0-10	---	35073*	35077*
0-15	02599	03190	03320
0-25	02609	03200	03330
0-30	02615	03205	03335
0-50	---	35075*	35079*
0-100	02622*	03220*	03350*
0-200	02626*	03240*	03370*
0-300	02627*	03250*	03380*

* Requires external current transformer. Order separately on page xx.

Analog Controllers



- Use in a variety of control, alarm, and limit applications
- Single or dual set point versions available
- Rugged black metal case designed to withstand harsh environments
- Splash-proof and sealed against moisture, dust and dirt

Rugged Seal Series

	Model 3323 3-1/2"SSP	Model 3323 3-1/2" DSP	Model 3324 4-1/2" SSP	Model 3324 4-1/2" DSP
Range	Cat. No.	Cat. No.	Cat. No.	Cat. No.
DC Millivoltmeters				
0-50	21663	21623	21670	21630
DC Volts				
0-1	21664	21624	21671	21631
0-50	21665	21625	21672	21632
DC Milliammeters				
0-1	21661	21621	21668	21628
	Model 3343 3-1/2"SSP	Model 3343 3-1/2"DSP	Model 3344 4-1/2"SSP	Model 3344 4-1/2"DSP
AC Voltmeters				
0-10	21675	21635	21679	21639
0-150	21676	21636	21680	21640
0-300	21681	21641	21682	21642
AC Ammeters				
0-5	21673	21633	21677	21637

Test Instruments

260-9S Analog Meter



The new 260 volt-ohm meter is suitable for testing practically all commercial and industrial installations and is rated to Category III-600V applications. Safety has been an important design feature of the 260-9S. This meter has several of the same features of the current 260-8.

- Certified to EN61010-1 to 600V, Category III
- Self contained AC current measurement up to 10 Amps
- Large color-coded scales
- Overload protection available
- Mirrored scale
- Wide range capabilities
- Includes test leads with retractable banana jacks and case

ORDERING INFORMATION:

12397	260-9S Safety VOM with case
12398	260-9SP Safety VOM, overload protection w/case

ACCESSORIES FOR 260-9S

00838	Safety Orange Case
07546	Test Lead Set

Let W.E.I.'s calibration lab help keep your test equipment up and running by:

- **Perform NIST traceable calibration with the latest Fluke calibration equipment and software.**
- **Track your test equipment assets to ensure that calibrations are current and up-to-date.**
- **Confirm that your test equipment is working properly and make sure it conforms to the manufacturers stated specifications.**
- **Provide detailed date, if necessary, to meet your internal quality requirements.**

NIST
CALIBRATION SERVICE
AVAILABLE